

Link Between Migration Status and Occupational Health and Safety of Filipino Migrant Workers in South Korea

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With its offer of competitive compensation and attractive employment permit system (EPS), South Korea has recently experienced an influx of migrant workers. There has been a concomitant rise in the concerns about the health and safety of migrant (especially undocumented) workers as well. The purpose of this study was to identify the prevalence of work-related health and safety problems among Filipino migrant workers and determine the relationship between migration status and occupational health and safety (OHS) problems. We conducted a survey of 116 Filipino migrant workers, both legal and undocumented. We utilized the Korean Occupational Stress Scale (KOSS), Nordic Musculoskeletal Questionnaire (NMQ), and a validated health and safety questionnaire to assess the various forms of occupational health problems they face. A focus group discussion (FGD) was also conducted to cross-validate information from the questionnaire. Descriptive data were presented in percentages, mean, and standard deviation (SD). Chi-squares tests and logistic regression analyses were performed to estimate the degree of association between variables ($P < 0.05$). Among the eight subscales of KOSS, inadequate social support (2.48), organizational injustice (2.57), and lack of reward (2.52) were experienced by workers. There was a 44.83% prevalence of musculoskeletal disorders (MSDs) with the arm/elbow having the highest rate, followed by the shoulder and low back regions. Inadequate social support and discomfort in organizational climate and overall MSDs prevalence showed significant relationships with migration status ($P < 0.05$). A significant relationship between migration status and some of the OHS problems faced by Filipino migrant workers in Korea was observed. In this study, undocumented workers were seen to be more vulnerable to stressors as compared to those employed legally.

Keywords: Filipino workers, health and safety, migration status, South Korea, undocumented workers

INTRODUCTION

The EPS of South Korea allows employers to legally employ foreign workers. The EPS was adopted in 2004 in response to the upsurge of migrant workers to Korea since the late 1980s (Lee 2006). It has five major goals: (a)

to guarantee an adequate supply of domestic workers by securing a foreign workforce; (b) to ensure transparency of the foreign workforce selection and introduction process, and to prevent corruption and anomalies in the sending process; (c) to select qualified foreign workers according to employer demand; (d) to protect the human rights of foreign workers; and (e) to implement equality

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between local (South Korean) and foreign workers on the application and observance of labor laws and policies such as Labor Standards Act, Minimum Wage Act, and Industrial Safety and Health Act (Korea Ministry of Employment and Labor 2015).

The official EPS website (Korea Ministry of Employment and Labor 2015) lists four major industries that may employ migrant workers. With an E-9 visa, workers who possess the set qualifications can work in manufacturing, construction, fish breeding, or agriculture and stockbreeding. The first item involves foreign workers participating in the manufacture of food products, beverages, tobacco, wooden material products, pulp, paper and paper products, chemical compounds and products, electronic components, video, audio and communications equipment and apparatuses, metals, and automobiles including trailers. In the construction industry, workers can work mainly on the building of airports, railroads, roads, harbors, and power plants, but also on projects that depend on their company of employment. Work in the fish breeding industry revolves around the cultivation of marine animals and plants in the sea or river. Finally, agriculture includes crop cultivation including gardening, growing mushrooms, fruit, vegetables, and other seeds, while stockbreeding consists of cow, beef cattle, pig, horse, and chicken farming. The working hours may vary but the minimum wage is in accordance with South Korea's Labor Standard Law, while an additional pay rate for overtime, night shift, or holiday work applies according to the contract suggested by each company (Korea Ministry of Employment and Labor 2015). Apart from these, most companies can offer free board and dormitory lodging as well as transportation service to and from work. From a minimum wage of KRW 7,530 (USD 6.19) per hour in 2017, panel members of the country's Minimum Wage Council decided to set it to KRW 8,350 (USD 6.86) an hour for 2019 (Kim 2018).

Generally, migrant workers are recognized to be among the most vulnerable members of society. They are often engaged in what is known as 3-D jobs – dirty, dangerous, and demanding (sometimes degrading or demeaning) – and are often hidden from or invisible to the public eye and public policy (Quandt *et al.* 2013a). According to a report from the International Labour Organization (ILO 2015), migrant workers work for longer hours for less pay and in worse conditions than their non-immigrant counterparts. They are often subject to human rights violations, abuse, human trafficking, and violence. Worldwide, immigrant workers have higher rates of negative occupational exposures – leading to poor health outcomes, workplace injuries, and occupational fatalities (Flynn 2014). Among these is exposure to environmental hazards such as hot or cold ambient temperatures (Garcia and De Castro

2017; Hansen and Donohoe 2003), pesticides (NIOSH 2017), and dangerous chemicals (Hsieh *et al.* 2016). Unsafe or unregulated working conditions also increase the risk of injuries. For instance, workers employed in the agriculture and farming sectors experience high rates of musculoskeletal injury (Quandt *et al.* 2013b) as a result of handling large farm animals, exposure to hazardous equipment, crushing injuries, repetitive motion, and falling (Cartwright *et al.* 2014; Hall and Greenman 2015; Liebman *et al.* 2013, 2016). Workplace demands (Landsbergis *et al.* 2014), lack of safety standards (Arcury *et al.* 2014), workplace abuse (Grzywacz *et al.* 2007), and trafficking and forced labor (Hodge 2014) are also occupational threats that foreign workers face. The quality of jobs for migrant workers in South Korea was found to have somewhat improved from 2018, although many remain working in low-paying positions with long hours. In South Korea, a total of 174,000 international residents worked 50–60 hours a week – an increase of 5,000 residents from the number in 2017 (Kim 2018).

Despite the limited body of literature that investigates the relationship between migration status and work-related health and safety problems, a study found that the situation is even more critical for immigrant workers who lack authorization, as these conditions put them at an increased risk of occupational fatalities and injuries when compared with native-born workers, even those doing the same job in the same industry (Moyce and Schenker 2018). Studies show that undocumented workers were less likely to make formal complaints to their employers about workplace safety violations because they feared to lose their jobs or getting deported (Bernhardt *et al.* 2009; Fussell 2011). Their documentation status is also often a reason for their ineligibility for various services, including medical insurance coverage or driver's licenses (Moyce and Schenker 2018). In South Korea, many migrant workers are exempted from mandatory employment insurance (Bang 2019), with the percentage of enrolment remaining low at 35.6%. In 2017, 7.8% of migrant workers reported being unable to visit the hospital, with the financial burden of healthcare most frequently cited as the reason. As of December 2018, the number of Filipino migrant workers under the non-professional employment (E-9 visa) reached a total of 26,104 (KIS 2018). However, for undocumented Filipino migrant workers, the Philippine Embassy in Seoul has no record of their exact population. It is believed that their number remains unchanged despite continued nationwide efforts by the South Korean immigration authorities to crack down on illegal migrants.

Despite the apparent occupational health risks and hazards that undocumented workers face, many choose to continue working in South Korea. Therefore, we hypothesized that those who lack legal authorization to work in South

Korea poses an added risk or threat to their OHS. Also, this study updates the limited body of knowledge about migrant workers. Specifically, the purposes of this study were to 1) identify the prevalence of OHS problems of Filipino migrant workers in South Korea, and 2) determine the relationship between work documentation and forms of OHS problems.

MATERIALS AND METHODS

Subjects

This cross-sectional study was conducted between May 2015 and August 2018 with Filipino migrant workers from the cities of Daegu and Gyeongsan in South Korea. Eligibility criteria included Filipino industrial and manual workers who have at least been working in South Korea for a year full-time or part-time. The sample comprised of 116 subjects from different companies and industries. A non-probability convenience sampling technique was used in this study.

Procedure and Instruments

The participation of all workers in this study was voluntary. The subjects were met in person and handed printed copies of the questionnaire, which were answered on-site. It took at least 10 minutes for each participant to complete the survey. This was done over multiple occasions as it was difficult to gather all the workers in one place at the same time for personal reasons. Although the native language of the participants was Filipino, they understood the questionnaire, which was in English. The first two parts consisted of a letter of consent and questions on the participants' demographic profile in terms of age, sex, status of stay (legal/undocumented), language fluency (Korean/English), number of workers (in the company where workers were employed), working hours per day, working days per week, hours sitting, hours standing, work shift (day/night/rotation), company type (automobile manufacturing/heavy industry/others), and job type (machine operator/manual labor/quality controller/assembly/others).

The next part were OHS items, which asked about the various health and safety concerns at work including those on language and communication such as (a) "EPS-Test Proficiency in Korean is mandatory at work;" (b) "Training for EPS-Test Proficiency in Korean is given;" (c) "My proficiency in Korean is enough for me to communicate and understand instructions at work;" (d) "There are (perceived) adequate interpretation services at labor for those who are unable to speak Korean fluently;" and (e) "I have difficulties in understanding

documents, labels on machines, labels on tools and equipment, and emergency and safety signage." Items on orientation and education were: (a) "General orientation is given to newly-hired workers on the occupational health hazards (Korean or English)" and (b) "I attended first aid orientation provided by the company (Korean/English)." For safety and insurance, items were: (a) "I attended education on safety and health provided by the company," (b) "I experienced actual incident or accident at work," (c) "Health insurance is provided by the company," (d) "I am provided with regular health checkups," (e) "I am working on hazardous chemicals and machines," (f) "I don't know the possible risks related to my work," and (g) "I developed some diseases by doing my work." The last items were related to compensation and management, they were: (a) "There were cases of unpaid wages in the workplace" and (b) "The wage that I receive is equal to the wage given to South Korean workers." Each question was answerable by yes or no.

A full version of the KOSS (Chang *et al.* 2005) comprised the third part. The KOSS was developed for two years (2002–2004). Chang *et al.* (2005) analyzed the scaling properties (equal variance, item internal consistency, and item discriminate validity), and performed the validation process (reliability and validity) to standardized KOSS. They developed the following eight subscales: difficult physical environment, high job demand, insufficient job control, inadequate social support, job insecurity, organizational injustice, lack of reward, and discomfort in occupational climate. Items were scored using conventional 1-2-3-4 Likert scores for the response categories.

The prevalence of MSDs was obtained by using the NMQ (Kuorinka *et al.* 1987). It covered musculoskeletal problems in different body regions. The MSDs cases of study participants were identified by considering period prevalence (12 months), point prevalence, and intensity of musculoskeletal troubles (*i.e.* aches, pain, discomfort, numbness or tingling) in different anatomical areas (*i.e.* neck, shoulder, arm/elbow, hand/wrist/finger, low back, and leg/foot) from NMQ. Although KOSS and NMQ are standardized questionnaires, the health and safety questionnaire was developed by the researchers. For this reason, a pilot test was conducted for the validity of the health and safety questionnaire with 20 East Asian migrant workers in South Korea who had sufficient fluency in English. After that, changes were integrated into the items that were thought to be complicated to understand or were misleading.

Apart from the questionnaire, we also conducted five FGDs. Since there is a dearth of evidence related to this study, the objective of FGD was to cross-validate

answers captured by the questionnaire and to support the presentation and discussion of quantitative data. It was conducted in a rented private function hall away from their workplaces. To ensure FGD participants of confidentiality, we instructed them not to mention any identifying information about their workplaces (*i.e.* name of the company, employer, address, *etc.*) during the discussion. There were 48 participants who attended the FGDs. They were chosen with the same criteria used with subjects of this study mentioned above. To ensure a diversity of information from each group, they were randomly divided into groups of five with one moderator and videographer for each group to lead the discussion and record the activity, respectively. The questions used were pre-determined and formulated based on the major items from the OHS questionnaire. The questions were on (a) Korean language training, (b) OHS orientation, (c) personal protective equipment (PPE), (d) workplace accidents, (e) compensation, and (f) OHS-related recommendations.

During the discussion, participants were asked and answered in a combination of English and Filipino. The questions were: (a) "Was the Korean-language training you gained in the Philippines enough for you to perform your job safely and effectively? If you were to give suggestions about that language training, what would they be?", (b) "Were you given an orientation about the safety measures to be taken related to your job before leaving the country? What kind of orientation? Was it sufficient? Why? Can you give some suggestions?", (c) "What safety gadgets does your company provide to protect you physically while at work? Are they helpful?", (d) "Have you ever encountered accidents related to your job? What was it? How did you cope with it? What kind of help did your company provide?", (e) "Do you think the pay that you are getting is commensurate to the risks inherent to your job? Why?", and (f) "What suggestions can you give to further promote the safety and health of EPS workers while at work?" After 70 minutes of discussion and open sharing of ideas, key points were noted by the moderators and responses were also later transcribed from the video recording. The notes and transcriptions were used to validate and support descriptive statistics from the results section.

Statistical Analysis

We computed and analyzed data using SPSS 23.0 software. Descriptive data were presented in percentages, mean, and SD. To compute for the mean and SD of KOSS subscales, the data from the questions of each subscale were sum together and treated as interval data. Chi-squared tests were performed to determine the relationship between migration status and the eight subscales from KOSS, MSDs scores, and

OHS problems. Logistic regression analyses were used to estimate the degree of association between the status of stay, the eight scales from KOSS, MSDs prevalence, and OHS problems. Results were expressed in odds ratio (OR), and 95% confidence interval (CI). For the comparison of ORs, we selected legal migrant workers as the reference group in binary logistic regression analyses. The level of significance was set at < 0.05 .

RESULTS

Personal and Occupational Characteristics of Subjects

Out of 200 questionnaires, 146 were returned, yielding a response rate of 73%. We followed up on incomplete questionnaires by contacting respondents through social media, text messaging, and by phone. However, many were unable to respond or had not updated their contact details, yielding a total sample of 116 for analysis. The mean age of the participants was 36.29 years – 70% were female and 30% were male. Most of them were undocumented (65%) and only 35% were legally working in South Korea. Sixty-three percent (63%) of the workers understood Korean, although their native language is Filipino. The average working hours per day was 10.63, which is beyond the normal eight hours. Sixty-eight percent (68%) of the workers were on the day shift and 12% were on the night shift. A majority (43.97%) of those surveyed were in heavy industry, with the second-largest group employed in automobile manufacturing (33.62%). Most of the workers worked as machine operators and manual laborers (31.90%). Additional personal and work-related information is presented in Table 1.

KOSS and MSDs Information

The participants' KOSS and MSDs scores are summarized in Table 2. Inadequate social support (2.48), organizational injustice (2.57), and lack of reward (2.52) were the subscales of KOSS experienced by the participants. In total, 52 of the workers reported MSDs symptoms indicating a 44.83% prevalence rate. The body region with the highest prevalence rate was the arm/elbow (33.62%), followed by the shoulder (25.86%) and low back with a rate of 25%. The neck and leg/foot parts had the lowest prevalence of 17.24%. Table 2 presents further information on KOSS subscales scores and MSDs prevalence.

OHS Information

The OHS-related questions were subdivided into four major parts: language and communication, orientation and

Table 1. Sociodemographic and occupational characteristics of Filipino migrant workers in South Korea, N = 116.

Variable	Frequency	
	Mean ± SD	N (%)
Age (year)	36.29 ± 4.73	–
Sex		
Male	–	81 (70%)
Female	–	35 (30%)
Status of stay		
Legal	–	41 (35%)
Undocumented	–	75 (65%)
Language		
Korean	–	73 (63%)
English	–	94 (81%)
Number of workers	30.14 ± 48.70	–
Working hours per day	10.63 ± 2.14	–
Working days per week	5.83 ± 0.73	–
Hours sitting	2.59 ± 3.15	–
Hours standing	8.12 ± 3.38	–
Work shift		
Day	–	79 (68%)
Night	–	14 (12%)
Rotation	–	23 (20%)
Company type		
Automobile manufacturing	–	39 (34%)
Heavy industry	–	51 (44%)
Others	–	26 (22%)
Job type		
Machine operator	–	32 (37%)
Manual labor	–	32 (37%)
Quality controller	–	13 (15%)
Assembly area	–	11 (13%)
Others	–	12 (14%)

education, safety and insurance, and compensation and management (Table 3). For language and communication, more than half of the participants (64.66%) reported that proficiency in Korean was not mandatory at work. Almost half of them (49.14%) also claimed to have sufficient proficiency in the language for them to communicate and understand instructions at work. According to 89 participants, newly-hired workers were given general orientation on occupational health hazards at work, and most of this information was in Korean (66.29%). In terms of safety and insurance, over half (53.45%) of

Table 2. Descriptive statistics of KOSS subscales and MSDs of workers, N = 116.

Variable	Frequency
<i>Subscale of KOSS (mean ± SD)</i>	
Organizational injustice	2.57 ± 0.64
Lack of reward	2.52 ± 0.64
Inadequate social support	2.48 ± 0.67
Job insecurity	2.41 ± 0.61
Insufficient job control	2.38 ± 0.66
Discomfort in organizational climate	2.37 ± 0.70
High job demands	2.35 ± 0.62
Difficult physical environment	2.33 ± 0.63
Total score	2.43 ± 0.65
<i>MSDs [N (%)]</i>	
Overall prevalence	52 (44.83)
Arm/elbow	39 (33.62)
Shoulder	30 (25.86)
Low back	29 (25.00)
Hand/wrist/finger	27 (23.28)
Neck	20 (17.24)
Leg/foot	20 (17.24)

KOSS – Korean occupational stress scale
MSDs – musculoskeletal disorders

the participants did not receive education on safety and insurance. The number of workers who had experienced an actual incident or accident at work was minimal, numbering 16. All such incidents were caused by machine malfunction and tiredness (100%). When asked about whether insurance provisions are made by the company, 74.14% of workers responded in the negative. Overall, a high percentage of respondents worked without regular health check-ups (76.72%). While a low incidence of unpaid wages was reported (20.69%), 42% reported unequal compensation compared to the native workers.

Table 3. Prevalence of OHS problems of workers, N = 116.

OHS problem	Yes	No
	N (%)	N (%)
<i>Language and communication</i>		
EPS-Test Proficiency in Korean is mandatory at work.	41 (35.34)	75 (64.66)
Training for EPS-Test Proficiency in Korean is given.	38 (32.76)	78 (67.24)
My proficiency in Korean is enough for me to communicate and understand instructions at work.	57 (49.14)	59 (50.86)

Table 3 continuation

There are adequate interpretation services at labor for those who are unable to speak Korean fluently.	31 (26.72)	85 (73.28)
I have difficulties in understanding:		
Documents	32 (27.59)	84 (72.41)
Labels on machine	45 (38.79)	71 (61.21)
Labels on tools and equipment	18 (15.52)	98 (84.48)
Emergency and safety signage posted around the company	20 (17.24)	96 (82.76)
Documents are in:		
Korean	74 (63.79)	42 (36.21)
English	42 (36.21)	74 (63.79)
Labels on machine, tools and equipment are in:		
Korean	72 (62.07)	44 (37.93)
English	44 (37.93)	72 (62.07)
Emergency and safety signage are in:		
Korean	64 (55.17)	52 (44.83)
English	52 (44.83)	64 (55.17)
<i>Orientation and education</i>		
General orientation was given to newly-hired workers on occupational health hazards.	89 (76.72)	27 (23.28)
Korean	59 (66.29)	30 (33.71)
English	30 (33.71)	59 (66.29)
I attended first aid orientation provided by the company.	80 (68.97)	36 (31.03)
Korean	68 (85.00)	12 (15.00)
English	12 (15.00)	68 (85.00)
<i>Safety and insurance</i>		
I attended education on safety and health provided by the company.	54 (46.55)	62 (53.45)
I experienced an actual incident or accident at work.	16 (13.79)	100 (86.21)
Causes were (multiple answers):		
Language problem	12 (75.00)	4 (25.00)
Machine malfunction	16 (100)	0 (0)
Health disturbance	10 (65.50)	6 (37.50)
Tiredness	16 (100)	0 (0)
Carelessness	2 (12.50)	14 (87.50)
Others	16 (100)	0 (0)
Compensation is given when an injury happens.	4 (25.00)	12 (75.00)
Health insurance is provided by the company.	30 (25.86)	86 (74.14)
I am provided with regular health checkups (per year or 6 months).	27 (23.28)	89 (76.72)

Table 3 continuation

I am working on hazardous chemicals and machines.	42 (36.21)	74 (63.79)
If yes, necessary safety gear and equipment (mask, glasses, etc.) are provided.	36 (85.71)	6 (14.29)
I don't know the possible risks related to my work.	26 (22.41)	90 (77.59)
I developed some diseases by doing my work.	6 (5.17)	110 (94.83)
<i>Compensation and management</i>		
There were cases of unpaid wages in the workplace.	24 (20.69)	92 (79.31)
The wage that I receive is equal to the wage given to Korean workers.	49 (42.24)	67 (57.76)

Association of Subscales of KOSS and MSDs with Migration Status by Chi-squared Test and Logistic Regression

Among the eight subscales of KOSS, the chi-squared test results showed that inadequate social support and discomfort in the organizational climate showed a significant relationship with the migration status of the participants (Table 4). Also, after adjusting for migration status, undocumented workers were more likely to experience inadequate social support (OR: 5.37, 95% CI: 2.41–11.95) and organizational injustice (OR: 1.29, 95% CI: 0.65–2.54). In terms of MSDs, the overall prevalence rate showed a high statistical significance of association with the participants' migration status ($P < 0.01$). All body regions such as the neck, shoulder, arm/elbow, hand/wrist/finger, low back, and leg/foot had a highly significant relationship with migration status ($P < 0.01$). However, all OR values from logistic regression showed that undocumented workers were less likely to experience symptoms of MSDs.

Association of Subscale of OHS with Migration Status by Chi-squared Test and Logistic Regression

High statistical significance relationships ($P < 0.01$) were found between migration status and seven items in the language and communication section of the OHS questionnaire. These items were: "My proficiency in Korean is enough for me to communicate and understand instructions at work," "There are adequate interpretation services at labor for those who are unable to speak Korean fluently," and on whether Korean or English are used in documents, labels, and safety signage. Additionally, the OR values of most of the items and in language and communication showed that undocumented workers were more likely to experience problems under this category than their legal counterparts, with ORs ranging from

Table 4. Relationship between migration status, KOSS, and MSDs; N = 116.

Variable	Legal N = 41	Undocumented N = 75	χ^2	P	OR	95% CI	
<i>Subscale of KOSS (mean ± SD)</i>							
Difficult physical environment	2.22 ± 0.51	2.28 ± 0.54	0.01	0.99	1.00	0.47	2.00
High job demands	2.49 ± 0.51	2.33 ± 0.53	2.63	0.27	0.56	0.27	1.18
Insufficient job control	2.54 ± 0.50	2.33 ± 0.58	4.01	0.14	0.51	0.25	1.04
Inadequate social support	2.24 ± 0.43	2.72 ± 0.56	27.75	< 0.01*	5.37	2.41	11.95
Job insecurity	2.56 ± 0.50	2.46 ± 0.55	1.60	0.45	0.68	0.33	1.41
Organizational injustice	2.55 ± 0.50	2.64 ± 0.58	5.77	0.06	1.29	0.65	2.54
Lack of reward	2.73 ± 0.45	2.59 ± 0.50	2.41	0.12	0.52	0.23	1.19
Discomfort in organizational climate	2.41 ± 0.50	2.41 ± 0.66	6.26	0.04*	1.00	0.53	1.87
<i>MSDs N (%)</i>							
Overall prevalence	25 (21.55)	27 (23.28)	6.69	0.01*	0.36	0.16	0.79
Neck	16 (13.79)	4 (3.45)	21.09	< 0.01*	0.09	0.03	0.29
Shoulder	18 (15.52)	9 (7.76)	13.87	< 0.01*	0.20	0.08	0.48
Arm/elbow	21 (18.10)	18 (15.52)	8.80	< 0.01*	0.30	0.13	0.68
Hand/wrist/finger	17 (14.66)	10 (8.62)	11.75	< 0.01*	0.22	0.09	0.54
Low back	19 (16.38)	10 (8.62)	15.40	< 0.01*	0.18	0.07	0.44
Leg/foot	14 (12.07)	4 (3.45)	21.09	< 0.01*	0.09	0.03	0.29

χ^2 – chi-squared test, *significant at $P < 0.05$

KOSS – Korean occupational stress scale, OR – odds ratio, CI – confidence interval

Adjudged with the status of stay by logistic regression, legal as a reference group

MSDs – musculoskeletal disorders

2.12–7.99 and 95% CI ranging from 0.65–28.26. There were significant relationships ($P < 0.04$, and $P < 0.01$) between orientation and education, migration status, the statement “General orientation is given to newly-hired workers on the occupational health hazards at work,” and the language used in the aforementioned orientation. For both these items, undocumented workers were also more likely to experience issues (OR: 2.47, 95% CI: 1.03–5.96; OR: 2.89, 95% CI: 1.31–6.40).

Moreover, in terms of safety and insurance, items such as “I attended education on safety and health provided by the company,” language and tiredness as reasons for incident or accident, “I am provided with regular health check-ups (per year or 6 months),” “I am working on

hazardous chemicals and machines,” provision of PPE, and knowledge on possible risks related to work had significant relationships with migration status of the participants ($P < 0.05$). The logistic regression analyses also revealed that undocumented workers were more likely to experience problems under this category, with OR values ranging from 1.14–9.50 with 95% CI ranging from 0.51–29.31. Chi-squared test values showed a significant relationship between the statement “There were cases of unpaid wages in the workplace” under compensation and management and migration status. The ORs of both items were 3.36 with 95% CI 1.06–10.64 and 1.99 with 95% CI 0.90–4.42, showing that undocumented participants were at higher odds of experiencing problems in relation to these items (Table 5).

Table 5. Relationship between migration status and OHS problems, N = 116.

OHS problem	Legal Yes N (%)	Undocumented Yes N (%)	χ^2	P	OR	95% CI	
<i>Language and communication</i>							
EPS-Test Proficiency in Korean is mandatory at work.	15 (29.93)	26 (22.41)	0.04	0.84	0.92	0.42	2.03
Training for EPS-Test Proficiency in Korean is given.	9 (7.76)	29 (25.00)	3.36	0.07	2.24	0.94	5.37
My proficiency in Korean is enough for me to communicate and understand instructions at work.	12 (10.34)	45 (38.79)	10.02	< 0.01*	3.63	1.60	8.20

Table 5 continuation

There are adequate interpretation services at labor for those who are unable to speak Korean fluently.	0 (0)	31 (26.72)	23.13	< 0.01*	–	–	–
I have difficulties in understanding:							
Documents	3 (2.59)	29 (25.00)	13.04	< 0.01*	7.99	2.26	28.26
Labels on machine	9 (7.76)	36 (31.03)	7.58	0.01*	3.28	1.38	7.81
Labels on tools and equipment	4 (3.45)	14 (27.07)	1.61	0.21	2.12	0.65	6.94
Emergency and safety signage posted around the company	4 (3.45)	16 (13.79)	2.49	0.12	2.51	0.78	8.08
Documents are in:							
Korean	15 (12.07)	59 (50.86)	20.32	< 0.01*	6.39	2.75	14.84
English	9 (7.76)	17 (14.66)					
Labels on machine, tools and equipment are in:							
Korean	14 (12.07)	58 (50.00)	21.00	< 0.01*	6.58	2.84	15.27
English	12 (10.34)	14 (12.07)					
Emergency and safety signage are in:							
Korean	13 (11.21)	51 (43.97)	14.12	< 0.01*	4.58	2.02	10.36
English	19 (16.38)	18 (15.52)					
<i>Orientation and education</i>							
General orientation is given to newly-hired workers on occupational health hazards.	27 (23.28)	62 (53.45)	4.20	0.04*	2.47	1.03	5.96
Korean	14 (12.07)	45 (38.79)	7.09	0.01*	2.89	1.31	6.40
English	9 (7.76)	33 (28.45)					
I attended first aid orientation provided by the company.	30 (25.86)	50 (43.10)	0.52	0.47	0.73	0.32	1.70
Korean	26 (22.41)	42 (36.21)	0.60	0.44	0.73	0.34	1.61
English	3 (2.59)	17 (14.66)					
<i>Safety and insurance</i>							
I attended education on safety and health provided by the company.	10 (8.62)	44 (37.93)	12.52	< 0.01*	4.40	1.88	10.28
I experienced an actual incident or accident in the company.	16 (13.79)	40 (34.48)	2.17	0.14	1.79	0.82	3.87
Causes were (multiple answers):							
Language problem	0 (0)	12 (10.34)	7.32	0.01*	–	–	–
Machine malfunction	13 (11.21)	26 (22.41)	0.10	0.75	1.14	0.51	2.57
Health disturbance	4 (3.45)	6 (5.17)	0.10	0.75	0.80	0.21	3.03
Tiredness	17 (14.66)	16 (13.79)	5.28	0.02*	0.38	0.17	0.88
Carelessness	0 (0)	1 (0.86)	0.55	0.46	–	–	–
Others	13 (11.21)	16 (13.79)	1.52	0.22	0.58	0.25	1.38
Compensation is given when injury happens.	1 (0.86)	3 (2.59)	0.19	0.66	1.67	0.17	16.56
Health insurance is provided by the company.	7 (6.03)	23 (19.83)	2.56	0.11	2.15	0.83	5.56
I am provided with regular health checkups (per year or 6 months).	4 (3.45)	23 (19.83)	6.49	0.01*	4.09	1.31	12.82
I am working on hazardous chemicals and machines.	4 (3.45)	38 (32.76)	19.21	< 0.01*	9.50	3.08	29.31
If yes, necessary safety gear and equipment (mask, glasses, etc.) are provided.	0 (0)	36 (31.03)	28.54	< 0.01*	–	–	–
I don't know the possible risks related to my work.	0 (0)	26 (22.41)	18.32	< 0.01*	–	–	–

Table 5 continuation

I developed some diseases by doing my work.	3 (2.59)	3 (2.59)	0.60	0.44	0.53	0.10	2.74
<i>Compensation and management</i>							
There were cases of unpaid wages in the workplace.	4 (3.45)	20 (17.24)	4.62	0.03*	3.36	1.06	10.64
The wage that I receive is equal to the wage given to Korean workers.	13 (11.21)	36 (25.86)	2.88	0.09	1.99	0.90	4.42

χ^2 – chi-squared test, *significant at $P < 0.05$

OHS – occupational health and safety

OR – odds ratio, CI – confidence interval

Adjusted with the status of stay by logistic regression, legal as a reference group

DISCUSSION

In this study, a significant relationship was seen between migration status and some of the OHS problems of Filipino migrant workers in South Korea. Undocumented workers were more vulnerable to occupational stressors compared to those working legally. Among the eight subscales of KOSS, inadequate social support, organizational injustice, and lack of reward were experienced by the workers, which are not uncommon (Chan *et al.* 2017). Based on the FGD, participants identified the language barrier, differences in culture, and low-level knowledge on the rights and privileges of foreign workers as major factors. The language barrier is a major reason for the lack of integration of migrant workers into the local working environment, and a serious issue that negatively influences the commitment and safety communication of workers (Loosemore *et al.* 2011). Results also revealed that 85% of the workers responded in the negative on the availability of interpreters at work. The relationship between language and safety is crucial especially in manually-laborious jobs, as poor language ability can place migrant workers and their local co-workers in jeopardy (Dainty *et al.* 2007).

Further, it was found that the workers' main goal was to pass the Korean language proficiency test as a basic requirement for employment. Consequently, the goal of getting at least a minimum score in a multiple-choice type of test, which could be achieved by chance, often sidelined achieving true fluency. "If we are lucky, we'll get the minimum passing score and that's really all we need," one worker quoted saying. No additional language training is provided by the company upon arriving in South Korea. Respondents further proposed that the government agencies from both the countries sending and receiving migrant workers should provide sufficient language training that includes practical situations, especially on machine-use and safety and day-to-day conversations at work.

The FGD revealed that South Korean employers predominantly choose workers by drawing lots. According to one worker, when they were told that they will be

working with metals, there is no knowing beforehand if it involves welding or polishing. This is a perceived leading cause of accidents or incidents at work. Results also showed that the majority of emergency signage, documents, and labels on machines, tools, and equipment are written in Korean script. Although basic training on first aid and safety is given in the Philippines during their language education, workers receive no specific safety information on the absolute nature of their work, including its possible risks and hazards. Upon a worker's arrival in the country, another general orientation is provided, but only in Korean. "It's certainly insufficient but we have no other choice but learn more on our own," another worker said.

The provision of proper PPE was also an issue among undocumented workers in this study. Some workers had to obtain PPE on their own after discovering the risks associated with their tasks. Requests for PPEs are often verbally acknowledged but eventually ignored by employers. Also, an on-site and step-by-step training by safety advisors or engineers on machine use might play a significant role in the prevention of accidents. Undocumented workers in this study further informed moderators that when accidents that require hospitalization occur, they have to shoulder the financial burden alone due to their ineligibility for health insurance as well as their company's lack of commitment to providing financial aid. Although these claims may not necessarily be reflective of the collective experience of undocumented workers all over South Korea, these results are crucial in providing empirical evidence of safety problems faced by undocumented workers in terms of machine-handling and operation, and the need to provide comprehensive and practical training on personal safety and machine-use.

Our results showed a significant relationship between inadequate social support, organizational discomfort, and migration status of Filipino workers ($P < 0.05$). Undocumented workers appeared to experience these two stressors more than those who are legally employed. FGD participants explained that if a worker does not participate

in after-work social gatherings (which are perceived as biased favor rather than moral or legal obligation), they are less likely to receive support from their supervisors. They also further explained that their primary reason for non-participation is the feeling of alienation triggered by their inability to express themselves in Korean.

Some participants also shared that Korean workers receive higher compensation and bonuses compared to their migrant counterparts. Migrant workers can also be easily assigned unhealthy work schedules and long working hours without prior consultation. Key informants indicated that their inability to be as socially active as their legal co-workers increased their vulnerability to these factors. Additionally, a constant fear of being caught and deported oftentimes limits them from spending time outside of the workplace. The Korean government's existing nationwide crackdown drive is a major concern not only for Filipinos but also among all undocumented migrants in the country.

Furthermore, it is not uncommon for small companies of less than 20 employees to hire undocumented migrants. They often do not subscribe to health and safety regulations as labor laws exempt them from hiring a safety officer. Workers observe that these smaller companies are also less frequently monitored by health and safety authorities as compared to larger companies. One worker revealed that their employers are taking the risk of hiring undocumented workers, even though a hefty fine for labor law violations awaits them if they are caught.

The prevalence of MSDs among legal and undocumented workers unlikely varied. The type and the nature of work given to migrant workers do not take into account their socio-demographic profile such as age, sex, previous work experience, or status of stay. Workers employed at the same company doing manual labor perform exactly the same tasks regardless of their migration status. Also, the highest number of workers were employed in the heavy industry (43.97%) followed by the automobile industry (33.62%), which can be expected to pose a high risk to developing MSDs symptoms.

A number of limitations in this study are perceived to have influenced the results. The study design, being cross-sectional, did not establish causality between variables. Also, there may have been bias as to the ability of the respondents to recall the experience of pain or other forms of OHS. Next, the small number and selection of participants in this study is a relevant factor as to the prevalence of the OHS problems presented. This means that results may not necessarily reflect the national situation of Filipino migrant workers in South Korea or of migrant workers in general. It must also be noted that the number of undocumented workers who participated in this study outnumbered those with legal documentation.

CONCLUSION

In December 2019, South Korea's Ministry of Justice announced it will now allow illegal migrants to re-enter the country if they voluntarily leave by June 2020 (Jung 2019). The new policy exempts those who leave on their own from paying fines and given an opportunity to obtain a short-term visa for 90 days after a certain period of time following departure. Under this new incentive program, over 8,000 illegal stayers left South Korea as of January this year (Yonhap 2020). Although the news did not specify the nationality of the illegal migrants who voluntarily exited the country, this new immigration policy proves to be attractive for undocumented migrants like Filipinos to consider going back to their home country. In this study, a significant relationship was seen between migration status and some of the OHS problems of Filipino migrant workers in South Korea. Specifically, undocumented workers in this study were seen to be more vulnerable to those stressors compared to those employed legally. Factors such as language barrier, unavailability of PPEs, ineligibility for health insurance, and the possibility of deportation make them an increasingly vulnerable group. However, for comprehensive representation and analysis of the occurrence of various OHS problems faced by Filipino migrant workers – both legal and undocumented – a wider survey across the country is suggested.

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